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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/666,918   | 09/18/2003  | Luigi Di Dio         | 856063.751          | 6478             |
| 500  | 7590        | 08/04/2005           | EXAMINER            |                  |
| SEED INTELLECTUAL PROPERTY LAW GROUP PLLC<br>701 FIFTH AVE<br>SUITE 6300<br>SEATTLE, WA 98104-7092 |             |                      | DANG, PHUC T        |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2818                |                  |

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/666,918 | <b>Applicant(s)</b><br>DI DIO, LUIGI |  |
|                              | <b>Examiner</b><br>PHUC T DANG       | <b>Art Unit</b><br>2818              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on amendment filed May 31, 2005.

2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1-17 and 21-24 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☒ Claim(s) 1-9 is/are allowed.

6) ☒ Claim(s) 10-16 is/are rejected.

7) ☒ Claim(s) 14 and 17 is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All    b) ☐ Some \* c) ☒ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)          |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. <u>0105</u> .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____.  | 6) <input type="checkbox"/> Other: _____.                                   |

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## **DETAILED ACTION**

### **Response to Arguments**

1. Applicant's argument filed on May 31, 2005 with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

### **Priority**

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### **Claim Objections**

3. Claim 14 is objected to because of the following reasons:

In claim 14, line 2, a term "deep UV" \_photo-resist layer should replace by -- "deep UV" photo-resist layer --.

### **Claim Rejections - 35 USC § 102**

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 10-12, 21 and 23-24 are rejected under 35 U.S.C. 102 (e) as being anticipated by Lyons et al., hereinafter "Lyons" (U.S. Patent No. 6,121,123).

Regarding claims 10, 21 and 24, Lyons discloses a method for manufacturing electronic

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semiconductor devices, comprising:

depositing a hydrophobic layer 18 directly on a semiconductor layer 16;

depositing a photo-resist layer 20 on the hydrophobic layer 18;

selectively removing the photo-resist layer 20 in order to form an opening therein

and expose a portion of the hydrophobic layer 18 [Fig. 2];

selectively removing the hydrophobic layer 18 in correspondence with the exposed portion thereof to expose a portion of the semiconductor layer 16 [Fig. 3];

etching the semiconductor layer 16 in correspondence with the exposed portion of the semiconductor layer 16 [Fig. 4]; and

removing the layer of hydrophobic material 18 and the photo-resist layer 20 from the unexposed portions of the semiconductor layer 16 [Fig. 5].

Regarding claims 11-12 and 23, Lyons discloses the hydrophobic layer is BARC, which is chosen from the group comprising BARC, polytetrafluoroethylene, polyethylene, polystyrene and polyvinyl chloride [col. 3, lines 30-45].

#### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons in view of Huang (U.S. Patent No. 6,004,843).

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Lyons discloses all the features of the claimed invention as discussed above, but does not disclose a step of removing the hydrophobic layer with a thickness from the unexposed portions of the semiconductor layer is performed through plasma.

Huang, however, discloses a step of removing the hydrophobic layer with a thickness from the unexposed portions of the semiconductor layer is performed through plasma [col. 4, lines 19-26].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to modify the above discussed teaching of Lyons as taught by Huang for a purpose of protecting MOS memory region.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons in view of Harada et al., hereinafter "Harada" (U.S. Patent No. 6,251,774 B1).

Lyons discloses all the features of the claimed invention as discussed above, but does not disclose the photo-resist layer is a "deep UV photo-resist layer".

Harada, however, discloses the photo-resist layer is a "deep UV photo-resist layer" [Fig. 1E and col. 7, lines 11-14].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to modify the above discussed teaching of Lyons as taught by Huang for a purpose of protecting MOS memory region.

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons in view of Wang et al., hereinafter "Wang" (U.S. Publication No. US 2005/0110152 A1).

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Lyons discloses all the features of the claimed invention as discussed above, but does not disclose the hydrophobic layer is positioned directly on the semiconductor layer, and the photo-resist layer is positioned directly on the hydrophobic layer.

Wang, however, discloses the hydrophobic layer is positioned directly on the semiconductor layer, and the photo-resist layer is positioned directly on the hydrophobic layer [Fig. 2H].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to modify the above discussed teaching of Lyons as taught by Wang for a purpose of protecting MOS memory region.

#### **Allowable Subject Matter**

8. Claims 1-9 would be allowed.

The following is a statement of reason for the indication of allowable subject matter:

Claims 1-9 are considered allowable since the prior art of record and the considered pertinent to the applicant's disclosure does not teach or suggest the claimed invention having a step of etching the substrate in correspondence with the exposed portion through chemical etching with a watery acid solution as cited in claim 1.

Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

None of the prior art made of record does not disclose a step of etching the substrate is performed by chemical etching with a watery acid solution.


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### Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamazaki'225.... Are cited interest.
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.
11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and After Final communications.
12. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang

PD



Primary Examiner

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